

PASSIVE SMOKING IS A RISK FACTOR FOR LUNG CANCER IN NEVER SMOKING WOMEN
IN HONG KONG

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INTRODUCTION

In Hong Kong, lung cancer is the leading cause of death due to malignant neoplasms in both sexes. On a world scale, lung cancer death rates among men are not particularly high in Hong Kong. However, the rates in women are among the highest in the world. Four case control studies have been carried out in Hong Kong to investigate the risk factors for lung cancer in women, particularly smoking and passive smoking. They are reviewed as follows:

I. 1976-1977 STUDY

The first major study on risk factors for lung cancer was a case control study on 288 male and 189 female patients. The controls were 204 male and 189 female hospital orthopaedic patients. Smoking was found to be a major risk factor in males with a relative risk (RR) of 27.51. In females, the RR for smoking was only 3.48. 44.4% of the cases were non-smokers whose tumours were predominantly adenocarcinomas (45.2%).¹

The role of passive smoking was studied by simply asking the question of "Are you exposed to the tobacco smoke of others at home or at work?" For non-smoking women, 49.5% of the cases and 47.5% of the controls had passive smoking. The RR for passive smoking was 0.75 ($P=0.38$).²

II. 1981-1983 STUDY

In the second case control study, 288 female cases and 288 district female controls matched for age were interviewed in depth using a semi-structured questionnaire. The RR for ever smoking was 2.77. 44.8% of the cases had never smoked.

Among the never-smoked wives, 61.4% of the cases and 51.8% of the controls had smoking husband. The RR for passive smoking due to smoking husband was 1.48 ($P=0.16$).³

III. 1981-1984 STUDY

The third case control study included 163 female cases and 185 female controls from hospital orthopaedic patients. Unlike the previous two studies, only histologically and/or cytologically confirmed cases were included. A standardized questionnaire was used for interviewing. The RR for smoking was 4.12. The proportion of cases who were non-smokers was 46.0%.

The role of passive smoking was studied only on the adenocarcinoma cases. For non-smoking women, 61.7% of the adenocarcinoma cases and

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44.4% of the controls had passive smoking due to smoking husband. The RR for passive smoking was 2.01 ($P<0.05$), Analysis was also carried out by the site of the tumour. For centrally sited tumour, the RR for passive smoking was 1.61 ($P>0.05$). For peripheral tumour, the RR was 2.64 ($P<0.05$).

IV. 1983-1986 STUDY

This was the largest case control study on lung cancer in women in Hong Kong. A standardized structured questionnaire was designed for interviewing. All the cases were confirmed pathologically. They were compared with 445 female healthy neighbourhood controls matched for age. The RR of ever smoking was 3.81.

45.5% of the cases were never smokers. For never smoking women, 57.8% of the cases and 45.4% of the controls had passive smoking due to a smoking husband. The RR for passive smoking was 1.65 ($P<0.01$, 95% C.I.=1.16, 2.35).

When broken down by cell type, the proportion of never smokers of 62.4% was the highest in adenocarcinoma and it was only in this cell type that the RR for passive smoking was statistically significant ($RR=1.87$, $P<0.01$, 95% C.I.=1.23, 2.85). Significant trends for RR with amount smoked daily by husband were observed for all cell types combined and for adenocarcinoma only.

TABLE I
SUMMARY OF RESULTS ON PASSIVE SMOKING AMONG NON-SMOKING WOMEN IN 4 CASE CONTROL STUDIES IN HONG KONG

| Study* | Cases/Controls | | Total no. of cases & controls | Relative risk | P value |
|--------------------|-----------------|--------------------|-------------------------------|---------------|---------|
| | Passive smoking | No passive smoking | | | |
| 1976-1977 | 34/66 | 58/73 | 223 | 0.75 | 0.38 |
| Chan & Pung, 1983 | | | | | |
| 1981-1983 | 54/71 | 34/66 | 225 | 1.48 | 0.16 |
| Koo et al, 1985 | | | | | |
| 1981-1984 | 37/64 | 23/88 | 284 | 2.01 | 0.03 |
| Lam WK, 1985 | | | | | |
| 1983-1986 | 115/152 | 84/183 | 534 | 1.65 | 0.007 |
| Lam TH et al, 1987 | | | | | |
| Grand Total | 248/353 | 191/402 | 1,186 | 1.43** | 0.004 |

* The study by Lam WK included only adenocarcinoma whereas the other three studies included all cell types.

** Summary relative risk by Mantel Haenszel's method

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SUMMARY OF RESULTS ON PASSIVE SMOKING

Table I shows the summary of results of the above four studies. Apart from the earliest study in which only one simple question was asked about passive smoking, they all showed a RR greater than unity. Statistical significance was reached in the recent two. The Mantel-Haenszel's summary RR was 1.43 (P<0.01, 95% C.I.=1.12, 1.83).⁷

In a review of epidemiological and other evidence on passive smoking and lung cancer, Blot and Fraumeni estimated a 30% excess risk⁶ while Wald et al calculated a relative risk of 1.35 by pooling the results of ten case control studies and three prospective studies.⁷ The summary RR of the four case control studies in Hong Kong is close to these estimates. Because the local prevalence of smoking among women was low (4.1%),⁸ the influence by misclassification bias would be much less than in western countries and could not account for the relatively high RR. The results in Hong Kong, therefore, strongly suggest that passive smoking is a risk factor for lung cancer in never smoking Chinese women.

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REFERENCES

1. Chan WC, Colbourne MJ, Fung SC, Ho HC (1979) Br J Cancer 39:182-192
2. Chan WC, Fung SC (1982) In: Grundmann E (ed) Cancer Campaign, Vol 6, Cancer Epidemiology, Fischer Verlag, Stuttgart and New York, pp 199-201
3. Koo LC, Ho JHC, Lee N (1985) Int J Cancer 35:149-155
4. Lam WK (1985) A clinical and epidemiological study of carcinoma of lung in Hong Kong. M.D. Thesis, University of Hong Kong, Hong Kong
5. Lam TH, Kung ITM, Wong CM, Lam WK, Kleevens JW, Saw D, Hsu C, Seneviratne S, Lam SY, Lo KK, Chan WC (1987) Br J Cancer 56:673-678
6. Blot WJ, Fraumeni JF Jr (1986) J Natl Cancer Inst 77:993-1000
7. Wald NJ, Nanchahal K, Thompson SG, Cuckle HS (1986) Br Med J 293: 1217-1222
8. Hong Kong Census and Statistics Department (1985) Special Topics Report III, Social Data Collected by the General Household Survey. Government Printer, Hong Kong

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